UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/716,431 | 11/20/2003 | Makoto Sasaki | 117835 | 6965 |

25944 7590 01/22/2008

OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

| EXAMINER | |
|---|---|
| DALEY, CLIFTON G | |
| **ART UNIT** | **PAPER NUMBER** |
| 2624 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 01/22/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/716,431 | SASAKI, MAKOTO | |
| | Examiner | Art Unit | |
| | Clifton G. Daley | 2624 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1, 4-11, 14-20, 23-25 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 4-11, 14-20, 23-25 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

This action is Final. Claims 1, 4-11, 14-20, 23-25 and 27 are currently pending. Applicant's response received on 10/9/2007 is fully considered herein and is not persuasive.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **(Original grounds)** Claims 25 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikegami (US 6100999).

Regarding **amended claims 25 and 27**, Ikegami discloses a color processing method and analogous apparatus comprising:

calculating color signal pair accuracies of target color signal pairs, wherein each of target color signal pairs includes a target input color signal and a target output color signal **(Ikegami: column 21, lines 7-12, i.e. precision function)**;

obtaining a color prediction model F expressed by,

F(an input color signal)=an output color signal

using the calculated color signal pair accuracies and the target color signal pairs **(Ikegami: column 8, lines 10-16, and column 14, lines 24-28)**;

and obtaining an inverse model of the color prediction model F **(Ikegami: column 8, lines 17-21, i.e. operations are reversed)**; and

predicting at least a part of an input color signal from a counterpart output color signal and the rest of the input color signal using the obtained inverse model **(Ikegami: column 8, lines 17-21)**.

**Summary of Applicant's Remarks:** Ikegami teaches that $x_{4j}$ is not a value obtained by prediction, but is instead a real value. Amended claims 25 and 27 recite "predicting at least a part of an input color signal from a counterpart output color signal and the rest part of the input color signal using the obtained inverse model."

**Examiner's Response:** Applicant's argument regarding $x_{4j}$ is correct. However $x_{4j}$ is only one part of the input color signal disclosed by Ikegami **(column 4, lines 17-21)**. Ikegami discloses using $x_{4j}$ (i.e. "the rest part of the input color signal") to predict "at least a part of an input color signal" (i.e. $(x'_{1i}, x'_{2i}, x'_{3i})$), as recited in the above claims.

The original 102(b) rejection is maintained.

## *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **(Original grounds)** Claims 1, 4-11, 14-20, 23-25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegami in view of Lundahl et al. (Hereinafter "Lundahl": US Patent Application 2002/0107858).

Regarding **amended claim 1**, Ikegami discloses a color data accuracy calculation method comprising:

extracting from a plurality of color signal pairs each including an input color signal in an input color space and a counterpart output color signal in an output color space **(column 3, lines 40-45)**, a target color signal pair including a target input color signal and a counterpart target output color signal in the output color space, which is to be calculated an accuracy thereof **(column 21, lines 8-12, i.e. the data pair being considered)**; and

extracting from the plurality of color signal pairs, a plurality of output vicinity color signals corresponding to a plurality of input vicinity color signals, which are located in the vicinity of the target input color signal in the input color space **(column**

**21, lines 12-16, i.e. input vicinity color signals are input color signals exclusive of the target pair).**

Ikegami does not teach calculating a color signal pair accuracy of the target color signal pair on the basis of a relation between the target output color signal and the plurality of output vicinity color signals,

wherein the calculating is calculating the color signal pair accuracy using a color signal statistical distance, which is a statistical distance between the target output color signal and the plurality of output vicinity signals, and

wherein the calculating is calculating the color signal pair accuracy using a monotone decreasing and smooth function of the color statistical distance.

However Lundahl teaches a method of calculating a color signal pair accuracy of the target color signal pair on the basis of a relation between the target output color signal and the plurality of output vicinity color signals **(page 12, ¶0219, lines 3-6, i.e. target output color signal corresponding to element j of output vicinity color signals corresponding to the set of elements in data matrix Y)**,

wherein the calculating is calculating the color signal pair accuracy using a color signal statistical distance, which is a statistical distance between the target output color signal and the plurality of output vicinity signals **(page 12, ¶0219, lines 3-6)**, and

wherein the calculating is calculating the color signal pair accuracy using a monotone decreasing and smooth function of the color statistical distance **(page 11, ¶0193, lines 3-6)**.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have combined Lundahl's teaching with Ikegami's method. The motivation to combine being to improve the quality of the color signal data **(page 1, ¶0002)**.

Regarding **amended claim 4**, Lundahl in combination with Ikegami teaches a method according to claim 1 wherein:

the color signal pair accuracy takes a value indicating abnormal **(Lundahl: page 4, ¶0079, i.e. indicating an outlier of group 1 for i=1 and number of groups=1)** when the color signal statistical distance is larger than a predetermined value; and

the color signal pair accuracy takes another value indicating normal **(Lundahl: page 4, ¶0079, i.e. is classified as belonging group 1)** when the color signal statistical distance is not larger than the predetermined value.

Regarding **amended claim 5**, Lundahl in combination with Ikegami teaches the method according to claim 1, wherein the calculating includes:

clustering the plurality of output vicinity color signals into at least two clusters **(Lundahl: page 13, ¶0228, line 1, i.e. output vicinity color signals Y has g clusters)**;

calculating the color signal pair accuracy using:

a cluster statistical distance between a gravity point of one of the clusters to which the target output color signal belongs and a distribution of the plurality of output vicinity color signals **(Lundahl: page 13, ¶0228, lines 4-6)**; and

a color statistical distance between the target output color signal and the distribution of the plurality of output vicinity color signals **(Lundahl: page 12, ¶0219, i.e. element j is the target output color signal and the cluster is the plurality of output vicinity color signals)**.

Regarding **original claim 6**, Lundahl in combination with Ikegami teaches the method according to claim 5, wherein:

the calculating is calculating the color signal pair accuracy using a monotone decreasing and smooth function of a total distance **(Lundahl: page 13, ¶0231)**, which is obtained from the color signal statistical distance and the cluster statistical distance **(page 12, ¶0218, lines 1-3, i.e. the distance used in the selected outlier test)**.

Regarding **original claim 7**, Lundahl in combination with Ikegami teaches the method according to claim 5, wherein:

the color signal pair accuracy takes a value indicating abnormal when a total distance, which is obtained from the color signal statistical distance and the cluster statistical distance, is larger than a predetermined value **(Lundahl: page 4, ¶0079, i.e. indicating an outlier where the color statistical signal distance is used or**

**the cluster statistical distance is used based on criteria as disclosed in page 12, ¶0218)**; and

the color signal pair accuracy takes another value indicating normal when the total distance is not larger than the predetermined value **(Lundahl: page 4, ¶0079, i.e. is classified as belonging group a group)**.

Regarding **amended claim 8**, Lundahl in combination with Ikegami teaches the method according to claim 1 wherein the statistical distance takes into consideration the dispersion of distribution of the output vicinity color signal **(Lundahl: page 10, ¶0171, i.e. the Mahalanobis metric, which was well known to one of ordinary skill in the art at the time the invention was made to take dispersion of distribution into consideration)**.

Regarding **amended claim 9**, Lundahl in combination with Ikegami discloses a color process method comprising:

extracting from a plurality of real data pairs each including:

an input color signal in an input color space to one of a color image input apparatus and a color image output apparatus **(Ikegami: column 3, lines 40-45)**; and

a counterpart output color signal in an output color space, a target color signal pair including a target input color signal and a counterpart target output color signal in the output color space, which is to be calculated an accuracy thereof **(Ikegami: column 21, lines 8-12, i.e. the data pair being considered)**;

extracting from the plurality of real data pairs, a plurality of output vicinity color signals corresponding to a plurality of input vicinity color signals, which are located in the vicinity of the target input color signal in the input color space **(Ikegami: column 21, lines 12-16, i.e. input vicinity color signals are input color signals exclusive of the target pair)**;

calculating a color signal pair accuracy of the target color signal pair on the basis of a relation between the target output color signal and the plurality of output vicinity color signals **(Lundahl: page 12, ¶0219, lines 3-6, i.e. target output color signal corresponding to element j of output vicinity color signals corresponding to the set of elements in data matrix Y)**;

repeating the extracting the target color signal pair, the extracting the output vicinity color signals, and the calculating the color signal pair accuracy while changing the target color signal pair to calculate accuracies of the real data pairs **(Ikegami: column 21, lines 20-25)**;

and calculating a prediction output color signal corresponding to a desired input color signal based on the real data pairs and the accuracies of the real data pairs **(Ikegami: column 21, lines 33-55)**,

wherein the calculating is calculating the color signal pair accuracy using a color signal statistical distance, which is a statistical distance between the target output color signal and the plurality of output vicinity signals **(Lundahl: page 12, ¶0219, lines 3-6)**, and

wherein the calculating is calculating the color signal pair accuracy using a monotone decreasing and smooth function of the color statistical distance **(Lundahl: page 11, ¶0193, lines 3-6)**.

Regarding **original claim 10**, Lundahl in combination with Ikegami teaches the method according to claim 9, further comprising:

when it is judged that at least one of the real data pairs is abnormal in the accuracy thereof, outputting at least one of the accuracy of the at least one of the real data pairs and information concerning the at least one of the real data pairs **(Lundahl: page 14, ¶0242 and TABLE A, row (c))**.

Regarding **claims 11 and 14-20**, since method and apparatus are analogous, the apparatus of claims of 11 and 14-20 are obvious over Ikegami in view of Lundahl as disclosed in the above methods of claims 1 and 4-10 respectively.

Regarding **claims 23 and 24**, Lundahl in combination with Ikegami discloses a computer program causing a computer to execute the processes disclosed in claims 1 and 9 respectively **(Lundahl: page 1, ¶0010, lines 1-4 and page 24, ¶0395, lines 10-13)**. Lundahl does not explicitly disclose a computer readable recording medium for storing the computer program. However a computer readable recording medium for storing the computer program is an inherent requirement of the computer disclosed by Lundahl.

**Summary of Applicant's Remarks:** regarding independent claims 1, 9, 11 and 19, and dependent claims 4-8, 10, 14-18 and 20, Lundahl does not teach a monotone decreasing and smooth function of the color signal. The vector B(i,:) is monotonic, but is not also decreasing and smooth. Lundahl does not teach calculating the weighted difference, corresponding to the color signal accuracy, using the vector B(i,:)

**Examiner's Response:** Lundahl does not teach the vector B(i,:) to be monotonic , smooth and decreasing. Neither does Lundahl teach calculating the weighted difference using the vector B(i,:). However Lundahl does teach calculating the accuracy (i.e. weighting) using the weighted distance **(page 12, ¶0219, lines 3-6)**, and discloses calculation of the accuracy using a smooth monotonic and decreasing function **(page 11, ¶0192 and ¶193)**.

The original 103(a) rejections are maintained as shown above.

## *Conclusion*

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifton G. Daley whose telephone number is 571-270-3144. The examiner can normally be reached on Monday - Friday 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Samir Ahmed
SPE

Art Unit 2624

CGD
1/17/2008